II

TREATMENT OF CHILDREN WITH CONGENITAL SYPHILIS

By DAVID NABARRO M.D., F.R.C.P.

Discussion

Miss Sandes said she had misunderstood the scope of the discussion, being under the impression it would include older children and adolescents. She threw upon the screen a table of 61 cases of congenital syphilis which she encountered at the Lock Hospital in the last five years, in patients of over ten years of age; no case of doubtful nature or which gave a negative Wassermann was included.

Case.	Age.	Clinical Features.	Films.	Previous Treatment.
N. L.	22	Pregnant. Mother S.	G + ve	Nil.
E. L.	22	Salpingitis. Typical facies	G + ve	Nil.
M. L.	21	Vaginal discharge $\frac{3}{12}$. Old I.K.	G — ve	Nil.
F. M.	21	Pregnant. History of "eye trouble"	G — ve	$\frac{6}{12}$ treat. 9 yrs. ago.
F McG.	19	Old I.K. Sent ∵ W.R. + ve	G — ve	Nil.
L. M.	35	G.P.I. Sent for malaria. C.S.F. positive. Typical facies.	G — ve	$\frac{6}{12}$ treat. 12 yrs. ago.
E. P.	17	Vaginal discharge $\frac{1}{12}$. Mental deficient	G + ve	Nil.
F. P.	19	Sent for training home. Old I.K.	G — ve	1 year's treatment.
A. B.	24	Salpingitis. Mother S.	G + ve	Nil.
W. B.	45	I.K. Gumma of nose several years	G — ve	$\frac{6}{12}$ treat. 20 yrs. ago.
K. C.	31	Pregnant. Old I.K..	G — ve	Nil.
A. C.	46	30 yrs. ago lost one eye in accident. I.K. in other eye now and going blind.	G — ve	Nil.
C. C.	25	Old I.K. Dull mentally	G + ve	Nil.
W. C.	22	Old I.K. Ulcerated leg. Pregnant for second time.	G + ve	Nil.
N.D.	18	Sister treated for C.S. No clinical signs in patient.	G — ve	$\frac{3}{12}$ treat.
M. D.	17	Blind L. eye ∵ I.K..	G + ve	Nil.
C. F.	41	Recurrent attacks I.K. (C.S.F. negative)	G — ve	Nil.
M. G.	17	Vaginal discharge $\frac{3}{12}$. Mother S.	G + ve	$\frac{3}{12}$ treat.
L. G.	18	Vaginal discharge $\frac{2}{12}$. Mother S.	G + ve	Nil.
L. H.	19	Fulminating I.K.	G — ve	Nil.
M. H.	25	Old I.K. Deaf. Gumma Rt. occ. lobe. C.S.F. positive. Died in hospital.	G — ve	$\frac{6}{52}$ treat. recently.
L. S.	37	I.K. ulcerated leg. Mental deficient. Pregnant.	G + ve	Nil.

TREATMENT OF CONGENITAL SYPHILIS

Case.	Age.	Clinical Features.	Films.	Previous Treatment.
D. S. .	18	Scarred soft palate. Sent for training home.	G — ve	1 yr.'s treat. recently.
S. S. .	21	Vaginal discharge $\frac{6}{12}$. Routine W.R. at prison.	G + ve	Nil.
L. S. .	25	Pregnant. Mother S. . . .	G + ve	1 yr.'s treat.
B. T. .	20	I.K. $\frac{2}{12}$. Salmon patch . . .	G + ve	Nil.
A. V. .	24	Ulcerated nose. Mother S. . .	G + ve	2 weeks' treat.
M. E. .	28	Pregnant. Juvenile tabes. Charcot's hip. (C.S.F. positive.)	G — ve	1 yr.'s treat.
M. L. .	16	I.K. Vaginal discharge $\frac{2}{12}$. Pregnant	G + ve	Nil.
M. P. .	10	I.K. Mother S.	G — ve	Nil.
C. P. .	16	I.K.	G — ve	Nil.
D. P. .	12	Vag. disch. 1 wk. Screams at night .	G + ve	Nil.
B. P. .	15	Persistent otorrhœa. Mother S. .	G — ve	Nil.
M. B. .	13	Vaginal discharge after "assault." Mother S.	G + ve	Nil.
M. M. B.	16	Deaf and dumb. Old I.K. Necrosis of turbinates. Otorrhœa. Mental deficient.	G — ve	Nil.
K. H. .	18	I.K. 4 months. (One eye blind) .	G — ve	Nil.
A H. .	28	Pregnant. Gumma of palate . .	G — ve	Nil.
E. H. .	38	I.K. 16 years ago. C.S.F. positive .	G — ve	Nil.
I.. J. .	20	Vaginal discharge $\frac{2}{12}$. Epilepsy. Mental deficient.	G + ve	Nil.
M. J. .	21	Pregnant. Third nerve palsy . .	G — ve	Nil.
M. K. .	31	Deaf. Old I.K. (Second eye now involved.)	G — ve	$\frac{6}{12}$ treat. 15 yrs. ago.
C. K. .	24	I.K. Ulcerated throat . . .	G + ve	Nil.
K. K. .	22	I.K. Vaginal discharge $\frac{2}{12}$ . .	G + ve	Nil.
D. W. .	17	Nasal voice. Perforated palate .	G + ve	5 weeks' treat.
B. W. .	17	No signs, but mother's W.R. + at Ministry of Pensions.	G — ve	Nil.
L. W. .	23	Double I.K. Previous attack L. eye .	G — ve	Nil.
D. R. .	19	Ulcerated mouth. I.K. 4 years ago .	G — ve	$\frac{6}{52}$ treat. 4 yrs. ago.
O. R. .	23	Iritis both eyes	G + ve	Nil.
L. S. .	30	Vag. disch. $\frac{3}{12}$. Scarring of throat .	G + ve	Nil.
M. P. .	11	Gummata of tibiæ. I.K. $\frac{3}{12}$ ago. Ulcerated palate.	G — ve	Nil.
J. C. .	12	I.K. recent	G — ve	Nil.
W. F. .	15	I.K. recent	G — ve	Nil.
E. I. .	15	Frontal headaches. Ulcerated pharynx	G — ve	1 yr.'s treat. 9 yrs. ago.
G. W. .	16	Vaginal discharge $\frac{3}{15}$. Mother S. .	G + ve	Nil.
J. E. .	11	Deaf. Old bilateral I.K. Dactylitis .	G — ve	Nil.
D. R. .	13	I.K. recent	G — ve	Nil.
G. R. .	10	I.K. Deaf. Perforated palate . .	G — ve	Nil.
A. S. .	14	Old I.K. Deaf	G — ve	Nil.
F. S. .	15	Old I.K. Hutchinson's teeth . .	G — ve	Nil.
F. W. .	15	Old I.K. Hutchinson's teeth . .	G — ve	$\frac{4}{12}$ treat. 1 yr. ago.
E. E. .	12	Nasal discharge. Hutchinson's teeth. Right iritis.	G — ve	Nil.

N.B.—All these cases gave a positive Wassermann reaction on admission.

Of the 61 cases over ten years of age, only 15 had received any previous treatment for congenital syphilis

at all; 24 were gonorrhœa positive, none were married; 24 were gonorrhœa positive, and 7 were pregnant; 34 of the 61 had old or recent eye affections, and that agreed with the President's remark about the preponderance of eye affections in these cases. She had seen all the 61 cases, and found no rashes in any. It might be asked how she knew they were congenital, not acquired cases. Her reply was that cases were not chosen for inclusion until the Wassermanns had been followed up, and Dr. Fawkner-Corbett did his estimations by a particular method, grading the intensity as *plus* 30, 60, 160, 240, etc. The congenital cases were very irregular in the degree of their Wassermann reactions, and that whether they were having treatment or not. The method of herself and many of her colleagues was to ignore the intensity of the Wassermann reaction in congenital cases, as treatment could not be guided by that. Acquired syphilis could never follow the congenital type of curve.

Of cases which had had previous manifestations, 12 had had previous attacks of interstitial keratitis, so that in 22 the first attack of the latter occurred after ten years of age, which differed from what the text-books stated. Of the 12 who were known to have had previous corneal trouble, only 4 were diagnosed by people who could diagnose the condition and were able to treat it. These cases at the Lock were given N.A.B. as practically a routine for interstitial keratitis. She had used silver salvarsan, and liked it, but it was difficult to give, especially in the case of young children; its employment could not be left to house surgeons unless they were experienced.

She did not know what the general opinion in the Society was, but the seniors on the staff of her hospital agreed that cases of congenital syphilis were now tending to be milder than formerly.

With regard to some points mentioned in the President's paper, she liked the scalp veins for the purposes of injection, though she agreed that there was a tendency for the vein to slip away while the injection was being carried out. Because of complaints of pain there was some preference for intramuscular injections elsewhere. The tendency at her hospital also was to give somewhat large doses intravenously, especially to children of twelve or thirteen years of age with interstitial keratitis; these

had 0·45 of the preparation per week. She found that children tolerated arsenic well, and she considered there was nothing like it for interstitial keratitis. Mr. Ernest Lane gave her advice which she had found very valuable: when dealing with a case which got worse instead of better under treatment by arsenic, switch over to bismuth; or, if being treated with bismuth, then switch over on to the arsenical treatment, and in many cases the condition will clear up. That had answered many times in apparently intractable cases.

With regard to the question of operation on congenital syphilitics, if such was contemplated on a congenital syphilitic, a course of treatment should be given before operation, even if much treatment had already been given, and whatever the condition of the Wassermann. Three years ago she saw a case of what was diagnosed as a Clutton's knee joint, and at the orthopædic hospital to which the case went it was regarded as a tuberculous knee, and, in spite of the age of the child—ten years—and her history, excision of the knee was performed, and it was put into plaster. That was the wrong treatment, even for tubercle. The child went home, and three months later she had a similar swelling in the opposite knee. Even the orthopædic hospital quailed at the prospect of giving a child two stiff knees, and so they proceeded to open the knee and explore the joint. Nothing was found, except some free fluid, and the wound was closed. At the site of the exploratory incision a typical gummatous ulcer developed. The family were tested, and the patient, father, mother and two sisters were Wassermann positive. That case made a great impression on her mind. She had seen 4 cases of congenital syphilis on whom it was intended to operate, abdominal operations in two, and in each case she was asked by the surgeon whether she advised anything in the way of treatment. She always advised it, and asked what others present thought about it.

With regard to treatment of small infants by breast-feeding, at the Lock Hospital the mother was given large doses of N.A.B., and the child possibly mercurial inunctions also. The children in this way received adequate doses of arsenic, and they did very well. On many occasions the mother's breast milk was restored, so as to obtain for the child one or two feeds per day

of breast milk which contained arsenic. In the cases treated by N.A.B. there were no fatal cases of jaundice.

With regard to giving glucose before N.A.B., if glucose be given just before injection it has to go through the stomach and be absorbed into the portal vein, and at least two hours must elapse before it reached the liver. Arsenic in the veins acted very quickly, and her patients did well without having glucose by the mouth. At the Lock Hospital the custom was to give a very good meal several hours before, and if the person was an out-patient she was instructed to have a good meal two hours before visiting the hospital. She did not believe in giving glucose to drink five minutes before an injection, though a few of the surgeons advise it.

As to indications of cure, she was anxious to learn about that, and would await what others had to say on the matter. Most surgeons she knew watched a case for seven years, or arranged that a watch should be maintained. The few cases of this kind she had had in private she had treated every winter for three years. She aimed at following the advice of Mr. Johnston Abraham, to treat cases by giving a course every year for some time, even if there were no signs of the disease. She had had two medical students, congenital syphilitics, under her care, and before each examination those students entered for, she gave a course of treatment, and a course every winter. The examination treatment was on the idea that examination time was one of stress and strain.

The advantage of such a discussion as this was that each could contribute a little to the general knowledge on a subject on which too little was known.

Miss SANDES, replying on the discussion, remarked that there was little to be said on the glucose controversy. The patients she had been referring to were in-patients, and one saw that they had good meals; glucose was not given as a routine to in-patients.

With regard to interstitial keratitis being a manifestation of congenital syphilis, the ophthalmic surgeon at the Lock Hospital considered this keratitis was a rare manifestation of acquired syphilis. She was taught that it practically never occurred as an accompaniment of acquired syphilis. The cases she recorded on the table exhibited had been definitely diagnosed as congenital

syphilis. She had seen cases of congenital syphilis who showed manifestations of the acquired disease.

As to variations in the Wassermann, there were in the Lock Hospital over 100 cases of congenital syphilis in which the Wassermann reaction was done every few days, and curves of it were kept over a long time, also of people who had treatment for the acquired disease, and they found that the Wassermann swing for the congenitals was much more extreme than in the acquired cases. No congenital case was seen which "let one down" in that respect. It was one of the confirmatory evidences in these cases in her opinion.

In the case of interstitial keratitis in the lady aged 46, she thought that was a recurrent attack. With regard to the case of gumma, she had seen cases of gumma in congenital syphilis; gumma could follow in a case insufficiently treated. At the South London Hospital was a woman aged 52, who was admitted to a general ward as a case of "acute abdomen," and the speaker was sent for to operate on a perforated gastric ulcer, which she did not do. The patient rallied next day, and Miss Sandes was talking to her, when the patient suddenly fell back and died. Her blood had been tested before she died. The autopsy showed that there was a dissecting aneurysm of the aorta, and the second attack was due to tracking of blood through the pericardium and a collection of blood at the bifurcation of the aorta. Both her husband and her children were Wassermann negative, but her mother and father gave a positive Wassermann.

Dr. ANWYL DAVIES said he had thoroughly enjoyed the President's paper, and also the contribution of Dr. Sandes; from both he had learned a considerable amount.

He was very interested to hear that the President did not weigh his patients; in infants the speaker thought it important to graduate the dose according to the patient's weight. At the Whitechapel Clinic this question of graduating the dose according to the patient's weight, as was the custom of some French authorities, had been carefully considered in relation to adults. When dealing with large numbers of patients this was found to be impracticable and uneconomical, and so the medical officer uses his discretion and prescribes a dose corresponding to whether the patient is small and fragile or heavy and robust. The weight of every patient is noted

before each injection, not from the point of view of calculating the dosage but as a guide to intolerance of the drug. The loss of several pounds in as many days is sometimes an indication of intolerance, and so the weight of the patient is watched from week to week. He agreed that in treating congenital syphilitics, even more than in adult acquired syphilitics, the treatment should be intermittent. The President's scheme of giving only two or three courses of spirocid seemed to the speaker to be insufficient and rather uncertain. To give three courses of this drug by mouth was a very inefficient method of treating congenital syphilis, though the lesions disappeared and a negative Wassermann could be obtained for a time. He asked what opinion the President had formed of cases he had treated by alternations of bismuth and mercury alone; also the effect of giving arsenic alternatively with bismuth and then alternating that with arsenic and mercury. For older patients especially, the great difficulty of administering mercury was to find a less messy, but equally effective, method to that of mercurial inunctions. He thought the value of bismuth was being overestimated and was impressed by Dr. Sandes's remark that some cases would not respond to bismuth, but did so directly they had an injection of arsenic.

With regard to interstitial keratitis he had found that a mild, stimulating dose of X-rays was very useful in an acute case; under this the photophobia rapidly vanished and the distress was relieved; he did not know how far it was curative.

It was satisfactory to hear from the President that nephritis due to bismuth was transient, and had no lasting ill-effect.

The last three questions on the paper were very difficult ones, but the President had answered them on common-sense lines, and the speaker agreed with him.

The remark of Dr. Sandes that congenital syphilis nowadays seemed to be milder than formerly was, no doubt, true. Still, Dr. Davies recently saw a boy who had all the fingers of both his hands stumped, as a consequence of congenital trouble. There was a thick periostitis of every bone in each hand.

He agreed with Dr. Sandes that glucose had very little effect with regard to that particular injection at the time,

but it meant that until the patient was seen again she had received an amount of glucose which she had been seen to swallow, and that was an important factor over a number of weeks, especially in the case of half-starved out-of-work patients. Besides, was there any harm in giving glucose? It was given to all patients receiving anti-syphilitic injections in his clinic, and with it concentrated extract of liver, which was a more important ingredient of the draught.

Mr. HAMISH NICOL considered that an important point was the length of time that congenitally syphilitic children should be kept under treatment: it was often difficult to decide that. If the Wassermann became negative after a course of treatment should one be satisfied with this, or should the treatment be continued some time after that had been achieved, and for how long? What was the likelihood of the Wassermann becoming positive again? He, like Dr. Sharp, had had several cases in elderly people who had a weak positive, but while under treatment it became strongly positive, then weak again. Continued treatment seemed to have no influence over these changes.

Most of the cases of congenital syphilis which he saw were sent to him from the Ophthalmic Hospital at Maidstone, and they had interstitial keratitis. They all seemed to do well on arsenic. With very young children he commenced with bismuth then went on to arsenic intramuscularly. He seldom used mercury except by inunction. When it was left to the parents to use it there was no evidence that they had done so. He thought treatment should be by injection. He was of opinion that children giving a positive Wassermann, even if they showed no signs of syphilis, should have treatment because the Wassermann reaction showed active syphilis. If a child's blood was negative and the parents had been treated during gestation, he would leave that child alone, but would keep it under observation.

Dr. B. B. SHARP said he felt a little sceptical about some of Dr. Sandes' patients being congenital syphilitics, on the evidence put forward. He asked whether interstitial keratitis was always regarded as a symptom of congenital syphilis; he thought it could occur in association with the acquired disease. And it raised the

question whether, given a congenital syphilitic, it was possible for him to acquire the disease in later life. One woman, aged 45, showed evidence of past keratitis and had a gumma on the nose. He had never seen a gumma develop *de novo* at forty-five years in a congenital syphilitic.

With regard to diagnosing congenital syphilis by the irregularity in the amount of the complement-fixation, that did not seem to him to be a very strong point, because in old-standing syphilis the intensity of the Wassermann varied a great deal from time to time. One treated an old-standing syphilitic who had a positive Wassermann, and after one or two courses it became negative ; treatment was continued, and yet at the next visit it was again positive. This variation, therefore, was not indicative of congenital syphilis.

Dr. S. HARDY KINGSTON said that in September he spent three weeks in Berlin, where he saw some of the work in the Clinic of Professor von Triboe. Two principal methods were in use, one by mouth, about which its advocates were very enthusiastic, and the other the usual injection method of bismuth and arsenic. The methods were very thorough, including the weighing of each child before giving it a dose either by mouth or injection.

He was given every facility to see their methods, in spite of the fact that the clinic was being enlarged and rebuilt.

Dr. R. V. FACEY said he had noticed that in treating interstitial keratitis on two occasions he obtained what he took to be a Herxheimer reaction ; at any rate, during a course of treatment with sulphostab the eye condition apparently flared up. He switched over to bismuth, and the eye condition improved. After his second case of the kind he changed his tactics, making a routine of putting each case on one course of bismuth before starting arsenic : and since he adopted that course he had been entirely satisfied.

With regard to arsenical poisoning, he asked whether the President gave glucose, or was it considered a bad thing to do so ? He remembered Colonel Harrison describing some experiments on dogs which had been fed on fat. Those which were fed on fat were the best, while those fed on carbohydrate were the worst, except

for the dogs which were starved. He did not know whether further work had been carried out on these lines: but since he learned these facts he had discontinued giving glucose in these cases. He asked what was the latest view.

Mr. AMBROSE KING first spoke of the treatment of the apparently healthy child of a syphilitic mother. He said it seemed doubtful whether one was ever justified in treating syphilis without diagnosing syphilis. Another question was: What were regarded as the criteria of cure of congenital syphilis? He doubted whether congenital syphilis was ever really cured; considering the extent of the infection and the number of organs involved, it was unreasonable to suppose that the spirochæte could be completely eliminated, though the disease manifestations might be kept under control. Cases had been seen in which manifestations of congenital syphilis appeared only after the lapse of a number of years, and others in which active lesions occurred, but with a negative Wassermann. If this be admitted, the corollary was that treatment of a case of congenital syphilis should not cease until adult life was reached.

He had seen a few cases in adults in which there were obvious stigmata of the congenital disease, and yet early in adult life syphilis had been acquired, spirochætes being found in the early lesions. The inherited immunity was apparently insufficient to afford protection against an acquired infection.

Major F. C. DOBLE had promised to write and send his answers to the President's questions. He agreed with Dr. Anwyl Davies in regard to glucose. The positive Wassermann, in his view, tended to die out at puberty when the syphilis was congenital. Congenital syphilitics should be treated as long as possible, regardless of the reaction to the Wassermann test. He had many cases of syphilitic iritis, and it was his intention to treat them for five years if possible.

Dr. ANWYL DAVIES said that when the paper by Craven on carbohydrate feeding of dogs was published he, the speaker, was impressed by it. He questioned a number of laboratory workers who were accustomed to working on dogs; they said that carbohydrate feeding upset dogs.

Dr. SIGNY said he had felt all along in regard to treat-

ment of congenital syphilis, except in very young infants, there was no place for intravenous therapy, as a slower absorption of arsenic was preferable, *i.e.*, extending over a longer period of time. For that reason, intramuscular injection was indicated, and if a higher arsenic content was required, treatment could be given twice a week.

He wished to make a plea that the Kahn rather than the Wassermann should be taken as the criterion of the patient's condition. He had seen many cases in which treatment rapidly produced a Wassermann negative, but the Kahn remained positive even after two or three more courses of bismuth and arsenic. If the Kahn were taken as the guide, there were likely to be less recurrences of late symptoms such as interstitial keratitis.

The PRESIDENT, replying on the discussion, expressed thanks to those who had participated. He hoped to receive still more answers to the questionnaire he had sent out.

He had not made it his practice at Great Ormond Street to take the Wassermann reactions at short intervals, as was done by Dr. Sandes and her pathologists. He usually took it every few months in order to ascertain what the effect of the previous course of treatment had been. With reference to Dr. Sandes's remarks about intramuscular injections, he was of the opinion that they were preferable to intravenous injections, because in the former case the drug was absorbed more slowly.

He was much interested in what Dr. Sandes said about giving a course of treatment before a contemplated operation was carried out. This was not made a point of at Great Ormond Street, yet he was not aware of any ill effects in the past through not carrying out Dr. Sandes's suggestion. For several years he had been stressing the importance of having the blood tested in cases of arthritis, as these cases are not infrequently syphilitic in origin.

As stated in his paper, he had not been in the habit of weighing his patients, because if the dosage depended upon the exact weight of the child, fractions of 0·1 c.c. of bismuth would have to be injected and it would be difficult to measure these accurately. He agreed, however, with Dr. Anwyl Davies, that it was desirable to weigh the children from time to time to watch their progress and to detect signs of intolerance. For the oral

administration of ovarsan, it was essential to have the children weighed, and he invariably had this done. He was unable to say at present whether three courses of ovarsan were sufficient to cure a case of congenital syphilis ; he had not been able to follow his cases sufficiently long. It is practically certain that young infants will be more easily curable, if curable at all, by oral treatment with ovarsan, than will older children.

The difficulty to which Dr. Anwyl Davies referred of using mercury inunctions can be overcome by using a method which his friend and former colleague Mr. George Waugh had recommended to him many years ago, namely, getting the patient to place a little mercury ointment in the sole of each sock or stocking every morning. The movements and pressure associated with walking and standing helped to promote the absorption of the mercury.

He was interested to hear Dr. Davies's encouraging statement as to the value of X-rays in the treatment of interstitial keratitis and he intended to try it himself in future cases.

In reply to Dr. Sharp, he had seen the W.R. fluctuate in children, but chiefly in cases which he had not treated sufficiently. Since he had made it a practice to give more than one course of treatment after the W.R. had first become negative, relapses had been less frequent.

He had seldom seen the Herxheimer reaction in the course of treatment of interstitial keratitis ; but since he had been treating this condition thoroughly with arsenic or bismuth, permanent corneal nebulæ were rarely seen. These cases apparently cleared up better now than under the old treatment with mercury alone. In further reply to Dr. Facey, he had not given glucose in cases of arsenical poisoning, but relied upon intravenous injections of sodium thiosulphate.

He was not able to give Dr. Logan the latest age at which a congenital syphilitic manifestation might arise, but he gathered from the literature that there appeared to be no limit to the age at which this could happen.

With regard to the giving of arsenic by mouth, it must be remembered that if a nursing mother were being treated by injections, the infant at the breast would receive a certain amount of arsenic *viâ* the breast milk, but it was probably not wise to rely upon this alone and

the child was given its own injection of arsenic or bismuth, or it received additional arsenic by mouth in the form of orarsan. Probably most members of the Society treated syphilitic children longer than he did, as they continued to treat for two years after the W.R. became negative. As previously stated, he was now treating his patients for a longer time after the blood had first become negative, but it was often difficult to get the mothers to bring their children regularly for treatment over long periods of time.

Major Doble reiterated the statement that the Wassermann reaction died out in congenital syphilitics at the time of puberty, but the speaker was not sure that was so in most cases. If he came across a case of congenital syphilis, he treated it; he did not give the disease a chance of dying out naturally. But he had seen a number of instances of adults with congenital syphilis and a positive reaction, and this had persisted long beyond the stage of puberty.

Dr. Signy believed that intramuscular injections were better than intravenous, and with that he, Dr. Nabarro, agreed. And he referred to complications of liver disease and nephritis after treatment, which he had found to be very rare.

He agreed that the Kahn was a better criterion of cure than the Wassermann, because he had frequently found the Kahn positive in a case when the blood Wassermann was negative. He remembered a case in which he had found the blood Wassermann negative but the Kahn positive, so he did a lumbar puncture and found the cerebrospinal fluid positive; if he had relied on the blood Wassermann alone he would have missed the case.

He was very grateful to all who had taken part in the discussion.